

British Destroyers at Jutland: Torpedo Tactics in Theory and Action¹

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ABSTRACT

This article considers the theory behind British torpedo tactics in 1916 and evaluates the success of these in the three major torpedo actions at the Battle of Jutland. By considering the technical processes and difficulties of mounting torpedo attacks in 1916 the article challenges Arthur Marder's claim that the destroyer actions at Jutland were 'disastrously ineffective'.

During the Battle of Jutland (31 May – 1 June 1916) there were three major torpedo attacks by British destroyers against lines of German capital ships. From 4.15pm, destroyers of the British Battle Cruiser Fleet (BCF) engaged the German 1st Scouting Group (ISG) and some of its accompanying destroyers. Both sides lost two destroyers while the action ended with the torpedoing of the German battlecruiser *Seydlitz*. After dark, from 11.30pm the British 4th Destroyer Flotilla (4DF) repeatedly attacked the battleships and light cruisers in the German van. The flotilla lost four destroyers with three more badly damaged; but, on the German side, two crippled light cruisers had to be scuttled, while the battleship *Nassau* and a destroyer were damaged. Later, as dawn broke at 2am, the British 12DF delivered an attack that blew up the German pre-dreadnought *Pommern* with the loss of all her crew.²

Of the attacks by the BCF's destroyers (the 13DF and four boats of the 10DF), Sir Julian Corbett declared that: 'The whole affair must ever stand as an exemplary piece of flotilla work in battle Though the positive effects were small ... [t]hey certainly forced the German battle cruisers to continue their turn away'. Arthur Marder concurred that the attack had 'further relieved the pressure on Beatty'. Corbett was less fulsome about the night attacks. 'As a strategical expedient for barring the

¹ I am grateful for the helpful comments on the first draft of this paper by the *BJMH* editor-in-chief, Matthew Ford, and the two anonymous reviewers. This final version has benefited greatly from their advice.

² John Brooks, *The Battle of Jutland* (Cambridge: Cambridge University Press, 2016), pp.08-14, 389-97 and 417-24.

passage of a battle fleet the flotillas had failed'. He added, mainly with reference to the 4DF, that: 'With all conditions of light and weather as favourable as could be expected, they had simply been overpowered by the enemy's searchlights, star-shells and secondary armament'. But he accepted that the 12DF's attack 'had been carried through to the end in the most brilliant manner in the face of a heavy and well-controlled fire'. Marder was more critical, stating that 'only the 12th Flotilla attempted to attack from ahead on opposite courses'; he considered that the 4DF had been 'given a splendid opportunity to attack' but that 'some Captains saw nothing amiss in attacking, from an unfavourable bearing, an enemy on a nearly parallel course'. He alluded to the night actions as 'disastrously ineffective' and 'a series of desperate scrapes'.³

The object of this paper is to assess the validity of these criticisms. This requires an examination of the fundamentals of torpedo tactics, not least to establish how the effectiveness or otherwise of an attack depended on the courses of the targets and the bearings of the attackers.

Torpedo Tactics

As can be seen in Table I the torpedoes used by both sides at Jutland had similar speeds and maximum running ranges, so they were subject to almost identical tactical constraints.⁴

Setting	British 21 in Mark II****	German 50cm G7**
High Speed (HS)	4,200 yards at 44-45 knots	5,450 yards at 35 knots
Long Range (LR)	10,750 yards at 28-29 knots	10,950 yards at 28-28.5 knots
Extreme Range (ER)	c. 17,000 yards at 18 knots	

Table I: Torpedo Maximum Running Ranges

In the main, destroyers used long-range (LR) torpedo settings shown in Table I for daytime attacks while at night, when ranges were much shorter, both the Long Range (LR) and High Speed (HS) settings were employed. The Extreme Range (ER) setting allowed torpedoes to be fired between the two battle lines that might be separated

³ Sir Julian Corbett, *Naval Operations Vol. III* (London: Longmans, 1923), p. 342, 405 and 409; Arthur Marder, *From the Dreadnought to Scapa Flow. Vol. III. Jutland and After* (Oxford: Oxford University Press, :978 – 2nd edition), pp. 8, 163, 170-1 and 222 – henceforward *FDSF III*.

⁴ N J M Campbell, *Jutland, an analysis of the fighting* (London: Conway Maritime Press, 1986), p. 00.

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by well in excess of 10,000 yards. To hit, a torpedo had to be fired on a collision course with its target.

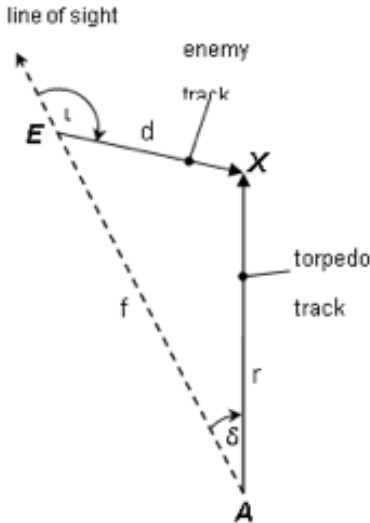


Figure 1a: Distance Triangle

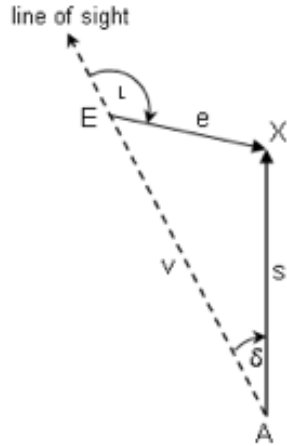


Figure 1b: Velocity Triangle

This principle is illustrated in the distance triangle of Fig. 1a.⁵ **A** and **E** are the positions of the attacker and the target enemy ship at the moment of firing. **AE** represents the *line-of-sight* from attacker to enemy, its length being proportional to f , the *firing range*. The angle l is the enemy's *inclination* relative to the line-of-sight. In conformance with the Royal Navy's convention for gunnery, the inclination angle is measured from the line-of-sight projected beyond the target; thus $l = 0^\circ$ when the enemy is stern-on and $l = 180^\circ$ when he is heading straight for the attacker. To hit, the torpedo must be fired at such an angle δ (called, for reasons to be explained, the *director angle*) that enemy and torpedo reach the point **X** at the same moment, a time t – the *running time* – after the torpedo is fired. If e and s are the speeds of the enemy and the torpedo, r the torpedo *running range* and d the distance travelled by the target in time t , then:

⁵ See *Handbook of Torpedo Control 1916*, June 1917, Plate I, UK National Archive (TNA), ADM 186/381 – henceforward *HTC*.

$$r(\mathbf{AX}) = st \quad \text{and} \quad d(\mathbf{EX}) = et$$

However, while getting the director angle correct, it is equally important to ensure that r is less than the torpedo's *maximum running range* r_m . Triangle **AEX** is of distances. There is another similar (equal-angled) triangle of velocities which is shown in Fig. 1b as triangle AEX. The sides AX and EX are proportional to s and e and the side AE (which lies along the line-of-sight) represents v , the *virtual speed* of the torpedo relative to the enemy.⁶ Since the two triangles are similar:

$$f = vt$$

In British ships at Jutland, the angle δ was calculated and the torpedo was aimed with an instrument called a *torpedo director*. There were many different patterns, including those on deck-mounted torpedo tubes (as fitted in destroyers and some light cruisers); on bridges for both aiming and tactical purposes; and in submarines.⁷ However, all were designed to model the velocity triangle of Fig 1b and consisted essentially of the three bars shown in Fig. 2: the *torpedo bar* (corresponding to AX); the *enemy bar* (EX); and the *sight bar* (AE). The torpedo bar carried two pivots (also labelled A and X in Fig. 2), one or the other (depending on the model) sliding on the bar so that the distance between them could be set to the torpedo speed s , using the speed scale engraved in knots on the bar. The sight bar was pivoted at A and, to enable it to be pointed at the enemy, it carried a back-sight at A and a fore-sight at its further end (and, in some patterns, a sighting telescope). The sight bar had a slot cut along its length and a scale engraved in knots of virtual speed. The enemy bar was pivoted at X and had a scale calibrated in enemy speed; this scale was used to position the pointer E such that $EX = e$. This pointer was also arranged to slide in the slot of the sight bar. Some directors were fitted with a disc centred on the pointer E with an angular scale which indicating the inclination I between the line-of-sight and the enemy course.⁸ The director was first set for s and e . Then the angles of the sight bar and the enemy bar were adjusted – thereby sliding the pointer E in the slot of the sight bar – until the angle between the sight bar and the enemy bar

⁶ As viewed from the enemy, the torpedo is seen as approaching along the line-of-sight.

⁷ See http://dreadnoughtproject.org/tfs/index.php/Category:Torpedo_Director, accessed 12 April 2017 for a summary of British and German torpedo directors and links to descriptions of the different patterns.

⁸ By the time of Jutland, the earlier Longmore disc had been replaced by Robinson's disc: http://dreadnoughtproject.org/tfs/index.php/Robinson%27s_Disc, accessed 12 April 2017.

The pointer at E indicated the virtual speed of the torpedo on the sight bar's speed scale. This bar could also be fitted with one of a number of *possible shot scales*, there being a different scale for each speed setting of the torpedoes carried by the ship.¹¹ Each *possible shot scale* was engraved with a range scale so that the pointer E also indicated the maximum firing range f_m at which the enemy ship was just within reach; if the firing range measured by a rangefinder was actually greater than f_m , firing the torpedo would be a wasted shot. The calibrations of the *possible shot scales* were based on the similar triangles shown in Fig. 1, for which: $f / v = r / s$ and, for a torpedo of speed s and maximum running range r_m :¹² $f_m = v \cdot (r_m / s)$

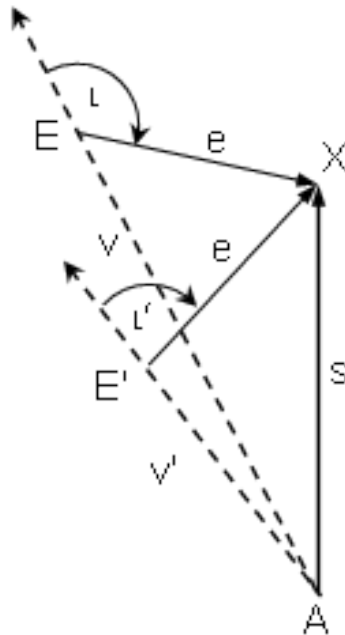


Figure 3: Velocity Triangles Comparison

¹¹ HTC, pp. 15-16.

¹² When $v = s$, $f_m = r_m$ i.e. the *possible shot scale* was positioned so that r_m on its scale was opposite the torpedo speed s on the v scale.

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Fig. 3 compares the velocity triangles for inclinations of greater than and less than 90° . As the inclination decreases, so too does v and hence, from the last equation, the maximum firing range f_m .

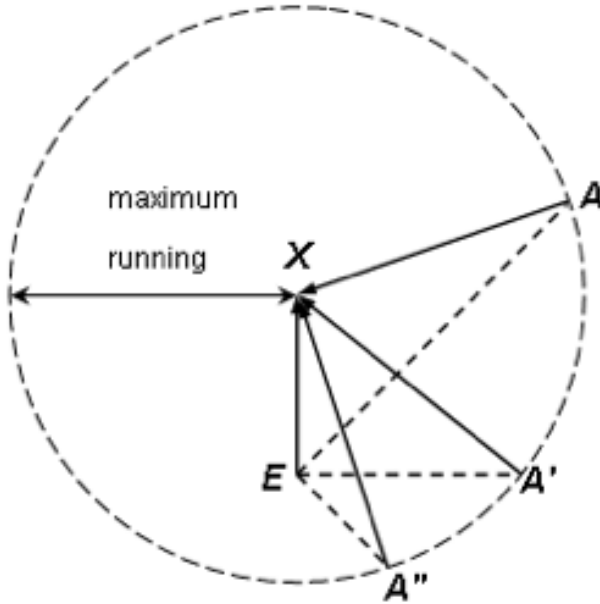


Figure 4

The tactical implications of this can be better appreciated by changing the point of view from that of the attacker at A in Figs. 1–3 to that of the enemy, as shown in the distance triangles of Fig. 4.¹³ EX represents the travel of the enemy target in the time it takes the torpedo to run its maximum running range. The circle centred on X , which has a radius r_m , represents all attacking positions from which the torpedo could just reach the enemy. Position A is that from which the inclination of the enemy is 135° : or, from the enemy's point of view, the attacker bears 45° on the starboard bow. Position A' represents an attacker bearing 90° i.e. on the enemy's beam; position A'' an attack from 45° abaft the enemy's beam. These examples illustrate the general principle that the firing range can be much greater when the attacker is well forward of the target's beam. Also, that the maximum effective target

¹³ This diagram is based on that within the memorandum 'Repelling Torpedo Attack in Action', 25 Aug. 1915 in TNA, ADM 137/1965, ff.210-11.

range is progressively reduced as the attacking position falls abeam and abaft the beam. Thus, by attacking from ahead of the target, the attacker has a much better chance of avoiding serious damage from the fire of the enemy's secondary and anti-torpedo-boat guns.

The attacker can also decrease the probability of hits from the enemy's defensive fire by choosing an attacking course which makes it as difficult a gunnery target as possible. Unlike in gunnery, the speed and course of the attacker does not influence the torpedo firing solution but it does influence the gunnery range-rate and deflection for the enemy's defensive fire. The attacker will be a more difficult target when these factors are maximised and, irrespective of the relative courses of attacker and enemy, deflection is maximised if they are on more or less opposite courses. Thus, the attacker will have a better chance of avoiding damage from enemy fire if his course is on the opposite side of the line-of-sight to that of the enemy – or, put another way, that the enemy's inclination is towards the attacker's stern not his bow. This consideration was important enough for post-action torpedo analysis to express inclination as an angle followed by either A or F, for Aft or Forward.¹⁴ Thus an inclination of (say) 130A was more favourable to the attacker than 50F.

Even when attacking from a favourable position, both gunfire from the target and the trying conditions on a fast-moving destroyer made both accurate estimation of target course and speed and precise torpedo aiming problematic. Furthermore, the target might well alter course as soon as the attacker fired, thereby invalidating whatever settings were on the Torpedo Director. Thus by 1916, the Royal Navy's view was that:

a hit ... on the ship aimed at with a single torpedo at long range ... can only be regarded as a fluke Under normal conditions a single ship should not be fired at from ranges outside 1,500 yards.

However, fortunately for the effectiveness of the torpedo as a weapon:

The use to which the torpedo will most often be put in daylight is that of *browning* a line of ships, the object being to make the torpedoes cross their tracks between the bows of the first and the stern of the last ship of that part of the line taken as the target.¹⁵

¹⁴ For A and F, see *Analysis of Torpedo Firing at the Battle of Jutland, 1918*, January 1918, p. 5 and p. 8 (TNA, ADM 186/586) – henceforward ATFJ.

¹⁵ *HTC*, pp. 82-3; In game shooting, 'firing into the brown' meant 'to let fly into a covey without singling out a bird': *Concise Oxford Dictionary*

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Thus, for dreadnoughts 600 feet (one cable) in length steaming in close order at 2½ cables stem-to-stem, the theoretical probability of a hit was 1: 2½ or 40% – though only in the unlikely event that the targets took no avoiding action when they sighted the approaching torpedoes.

To reduce further the probability of hits, the targets might well turn away as the torpedoes were fired in the hope of evading them altogether.¹⁶ To counter such turns, both the British and German navies preferred to fire torpedoes only if, assuming that the enemy held his course, the torpedoes reached his line after running a fraction of their maximum range. The Royal Navy's preferred margin fluctuated somewhat. In a destroyer memorandum of 1 May 1916, Jellicoe ordered that 'flotillas should, if possible, close the enemy sufficiently to ensure torpedoes crossing the track with between 3,000 and 4,000 yards running range still available'; this was an increase from the 2,000 yards specified in earlier destroyer instructions.¹⁷ German tactical orders demanded a 'safety allowance of at least 25 to 30 per cent of the total range'.¹⁸ As Fig. 5 below shows, with a range margin of about 30%, if a line of ships turned away together, a torpedo could miss its nominal target **E** but still hit another enemy ship **E'** following astern.

¹⁶ Turns made as torpedoes were launched are here described as 'evading'; those made as the torpedoes approached are termed 'avoiding'; this is the same convention adopted in *Brooks, Jutland*, p. 92.

¹⁷ Destroyer Addendum VI.2 (22 Oct. 1915), Destroyer Instructions, XXX.5 and Jellicoe, Memorandum, 1 May 1916 in *Grand Fleet Battle Orders. Volume III, Jutland*, ff. 332b, 339 and 341, TNA, ADM 186/597 – henceforward *GFBOs III*. The inclusion of this memo with the other Jutland *GFBOs* contradicts Marder's assertion (*FDSF III*, p. 171) that it was not issued before the battle.

¹⁸ *German Tactical Orders*, January 1915 p. 7 in 'German Fleet Orders' TNA, ADM 186/17.

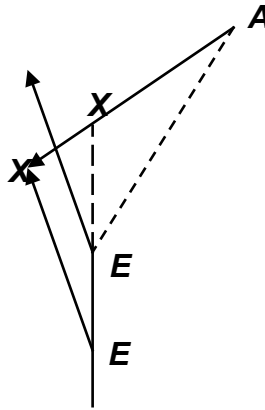


Figure 5

The 1916 torpedo handbook, which presumably incorporated the lessons of Jutland, concluded that, to allow both for comparatively large errors in the enemy's course and speed and for an enemy turning away, an attacking 'position four points on the bow of the leading enemy ship ... at a range of 7,000 yards with 10,000-yard torpedoes ... may be taken as fulfilling ... requirements'. The handbook also recommended that, 'against an enemy who is developing a rapid and effective gunfire, destroyers should not approach within 7,000 yards gun range of the enemy'. However, an attacking flotilla might well encounter the enemy line when the flotilla was not ahead of the van but on or even abaft its beam. In such circumstances, to avoid excessive damage from the fire from the enemy line, the length of the perpendicular from the enemy line to the flotilla could be no less than 7,000 yards. The gunfire from the enemy ships close to the far end of this perpendicular represented the greatest threat to the attackers. Yet, as Fig. 6 shows, these enemy ships at E' were not at all the best targets for torpedoes, being reachable at best with a reduced range margin, while those further ahead than E'' were beyond the maximum torpedo running range. It can be calculated that, if the enemy line was proceeding at 17 knots and the torpedo speed was 28 knots, the best targets were those like E from which the attackers bore about 5 points on the starboard bow;¹⁹ this bearing maximised both the range margin and the turn-away that was needed if the targets were to evade the torpedoes completely.

¹⁹ Brooks, *Jutland*, p. 94.

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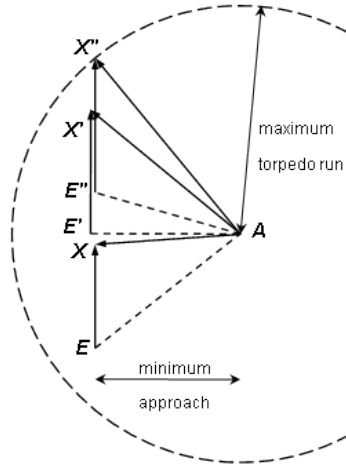


Figure 6

But how large should this turn-away be? Fig. 7 looks at this problem from the point of view of the ship under attack, which has been relabelled \bigcirc to signify *own ship*. It was necessary to consider not only those torpedoes fired, accurately or not, at \bigcirc : but also those fired at *any* ship in the line. If the turn-away was insufficient, there was always a possibility that one of these torpedoes would intersect the new course at the wrong moment. Thus, in this figure, \bigcirc has turned away but has been hit at X' by a torpedo intended for a ship ahead in the line.

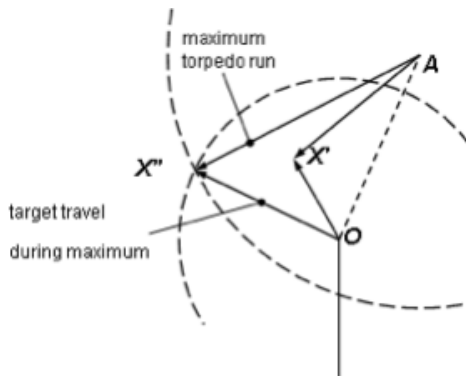


Figure 7

To be safe, the turn-away has to be greater than that required to intercept *any* such torpedo just as it ended its run, that is, at point **X''** in Fig. 7. This ensured that the target ship passed ahead of all possible torpedoes before they stopped. If the perpendicular distance from the enemy line to the attacking flotilla was 7,000 yards, a turn-away of 3½ points was more than sufficient: at 8,000 yards, 2½ points.²⁰ However, once a ship had turned away, it had to hold its course for the running time of the attacking torpedoes (about 11½ minutes for the German G7**). If a torpedo attack was to be evaded safely, the turn-away had to be made quickly, as soon as the attackers were seen to launch their torpedoes. Two instruments were designed in the Royal Navy to determine without calculation how far to turn away; they were the Bunbury and Crace Enemy Torpedo Calculators. Both embodied the principles illustrated in Fig. 7 and both were able to calculate the turn-away angle not only for the ship that carried them but for other ships ahead and astern in the line. A Bunbury calculator was under trial in *Iron Duke* at Jutland and was used at the climax of the battle when Jellicoe turned away from the attacking German destroyers.²¹

Especially in daylight, ships under attack also had a chance of avoiding torpedoes when their tracks became visible in the last minutes of their run. Jellicoe's *GFBO* torpedo memorandum of 1 May 1916 recommended:

To increase the chance of hitting, the maximum number of torpedoes should be fired in attack, providing conditions are favourable.

The attached remarks added that:

Commanding officers of destroyers must use their own discretion as to the number ... to be fired ... two torpedoes for certain and all if the conditions are favourable.²²

²⁰ *Ibid.*, pp. 94-5.

²¹ *HTC*, pp.42-4 and Plates XXIII and XXIV. See also www.dreadnoughtproject.org/tfs/index.php/Bunbury_Enemy_Torpedo_Calculator and [/Crace_Enemy_Torpedo_Calculator](http://www.dreadnoughtproject.org/tfs/index.php/Crace_Enemy_Torpedo_Calculator). Accessed 12 April 2017, Viscount Jellicoe, *The Grand Fleet 1914-1916. Its Creation, Development and Work* (Ringshall: Ad Hoc Publications, 2006 – first published 1919), p. 229.

²² 'Memorandum', 1 May 1916 and 'Attack Plans. General Remarks' para. 11 in *GFBO III*, ff.341-2 with original emphasis. See also *HTC*, p. 83.

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Not only did this increase the overall probability of making hits but it also increased the likelihood that, while avoiding one torpedo, a ship was more likely to stray into the path of another.

The same principles of torpedo attack and defence applied, at least in theory, to night attacks at shorter ranges when torpedoes set for high speed were more likely to be used. But in practice the blinding effects of searchlights and gun flashes made accurate observation impossible; the best chance of success was a browning attack on the middle of a line, firing as many torpedoes as possible from close range. The attack plans accompanying Jellicoe's torpedo memorandum anticipated that at night:

...a flotilla may be suddenly confronted by a fleet or squadron ahead, or nearly so. ... It is probable that, if the whole flotilla turned one way [to] attack, the enemy would turn in the direction which would place the destroyers abaft the beam. The flotilla therefore should split, thus ensuring half a flotilla being in position to attack whichever way the enemy may turn.²³

British Torpedoes at Jutland

The three major British torpedo attacks at the Battle of Jutland – by the BCF destroyers, the 4DF and the 12DF can now be considered in the light of these tactical principles. The 4DF's attacks were preceded by two brief actions between the light cruisers of the German IVth Scouting Group (IVSG) and the British 11DF and then the 2nd Light Cruiser Squadron (2LCS). These will also be described since, in the second action, *Southampton* scored the other notable British success by torpedoing the light cruiser *Frauenlob*. Full tactical narratives of all these actions can be found in the writer's book *The Battle of Jutland*.²⁴ Only the essential details will be given here, though they are augmented by the data on most British torpedoes fired during the battle that were promulgated in January 1918 in the *Analysis of Torpedo Firing at the Battle of Jutland, 1918*. At that time, no reliable information was available from the German side to verify claims about the identity of targets and hits. But the analysis of the actual British firings, most importantly the firing ranges, speed settings and inclinations, give valuable insights into why some attacks were more successful than others.

²³ 'Attack Plans. General Remarks' para. 13 and Diagram No. 6 in *GFBOs III*, ff.342 and 350.

²⁴ Brooks, *Jutland*, pp. 208-214, pp. 389-397 & pp. 417-424

BCF Destroyers

At the start of the Run to the South, Vice-Admiral Sir David Beatty, following his preference for using destroyers offensively, ordered his destroyers to take station ahead in readiness for a torpedo attack.²⁵ At about 4.15pm, Captain James Farie in *Champion* led out the 13DF in three divisions, with the 2nd Division – in order *Nestor*, *Nomad* and *Nicator* – leading. It appears that the 3rd Division – *Narborough*, *Pelican*, *Petard* and *Turbulent* – were next, followed by *Nerissa* and *Termagant* of the 1st Division. *Moorsom* and *Morris* of the 10DF – the latter as much as a mile astern – joined *Nestor*'s division. Initially, all steamed hard on a course diverging from their battlecruisers by two or three points in order to reach a favourable position to attack the ISG from ahead. At about the same time as the British destroyers moved out, at 4.14 Vice-Admiral Franz Hipper, commanding the ISG in *Lützow*, also ordered his destroyers to attack and the German IXth Torpedo Boat Flotilla (IXTF of 11 boats) began to close unobtrusively until, when the range had fallen to some 11,000 yards, they turned inwards in four groups.²⁶

Having reached a favourable position on *Lützow*'s starboard bow, *Nestor* turned 12-14 points to port preparatory to running down to launch torpedoes; *Nicator*, *Nomad* and probably others followed in succession. Gunfire between the opposing flotillas intensified as the range closed rapidly; the German V27 was crippled and *Nomad* was soon brought to a halt. *Nestor* and *Nicator* pressed on; each fired two torpedoes at the German battlecruisers at ranges of 5-6,000 yards – though *Nicator*'s second torpedo stuck in its tube, endangering the ship for a time. *Nicator* inclinations were 135A and 105A and *Nestor*'s were probably also favourable. None of the torpedoes hit but between 4.27 and 4.36, the ISG turned away by a total of eight points; this was more than was needed to evade the British torpedoes but Hipper was also concerned to escape the heavy and accurate fire from the British 5th Battle Squadron (5BS) that was falling on his two rear battlecruisers.²⁷

As this British attack was delivered, the German destroyers were already withdrawing on their van and rear battlecruisers. Between 4.27 and 4.36 they had fired 10 torpedoes at ranges of 8-9,000 yards. As well as this long firing range, the inclination of the British battlecruisers was less than 90°, while between about 4.26 and 4.33 Beatty had turned away by two points to S;²⁸ none of the German

²⁵ John Brooks, 'Grand Battle-Fleet Tactics: from the Edwardian Age to Jutland' in R Blyth, A Lambert and J Rüger (eds.) *The Dreadnought and the Edwardian Age* (Farnham: Ashgate, 2011) pp. 196-7, 203-6 and pp. 210-11.

²⁶ Brooks, *Jutland*, pp. 208-11.

²⁷ *Ibid.*, pp. 206 and 211-12. *ATFJ*, pp. 8-9 (Tables I.A and II).

²⁸ *Ibid.*, pp. 206 and 212 and Fig. 5.1.

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torpedoes were seen to reach the British ships. *Nestor* and *Nicator* swung to starboard to ENE and went after the van group of German boats, though they then came under heavy fire from the secondary armament of the ISG. The range from *Nicator* came down to only 3,000 yards, though the inclination was still a favourable 120A. Each boat fired one more torpedo before turning back. But *Nestor* soon received two hits in her boilers, bringing her to a standstill, though *Nicator* escaped without damage.²⁹

Petard and *Turbulent* attacked immediately after *Nestor's* division. At 4.25, *Petard* fired a torpedo (set for HS to run at a depth of 6 feet) at a group of German boats, firing range 2,000 yards with an inclination of 160F. V29 was hit by this *browning* shot and she was seen a few minutes later obviously sinking. *Petard* then went on to fire her three remaining torpedoes at the ISG. The first two, at 4.27 and 4.30, were at a firing range of 7,000 yards, the inclination being a favourable 120A. The third was timed at 4.40 at 7,000 yards with an inclination of 120F; it seems that, despite the reported time, this torpedo was fired after the ISG reversed course from 4.48. *Turbulent* may also have fired one or more torpedoes at about this time.³⁰

Moorsom also reported that she attacked with *Nestor's* division but she became embroiled in the gun action with the IXTF. Once the German destroyers were driven off, *Moorsom* went off on her own. After the ISG turned northwards, she sighted the High Seas Fleet coming up astern; she fired two torpedoes at the van battleships and, shortly afterwards two more, though without hitting. The firing ranges were all 8,500 yards and the inclinations either 130F or 135F. Since, on her way back, she passed *Nomad* lying stopped, the firing times were probably earlier than the 5.10 and 5.30 given in the torpedo firing analysis.³¹

When *Narborough* sighted the High Seas Fleet, her commander decided to retain all his torpedoes for a fleet action rather than fire them at long range. *Nerissa* and *Termigant* commenced their attack on the ISG on a northerly course but 'owing to the enemy turning 16 points, this attack had eventually to be carried out on a Southerly course'.³² Only *Nerissa* was able to fire two torpedoes, at a range of 7,000

²⁹ Ibid., p. 212. ATFJ, p9 (Table II).

³⁰ Ibid., pp. 211-13. ATFJ, p .8 (Table I.A) and p. 10 (Table VI).

³¹ Ibid., p.213. ATFJ, p9 (Table II).

³² *Nerissa's* despatch, *Battle of Jutland 30th May to 1st June 1916. Official Despatches with Appendices*, Cmd.1068 (London: HMSO, 1920) p235 – henceforward OD.

yards; the inclination of 120A is consistent with her having turned about. *Nerissa* claimed that one of her torpedoes appeared to hit the rear battlecruiser.³³

Of the 11 British torpedoes fired at the ISG,³⁴ just one scored a belated hit, though not on the rear ship. Soon after Hipper turned his ships northwards, *Seydlitz* – third in line – sighted first one and then more tracks of approaching torpedoes. She tried to avoid them by sharp turns, so much so that, when her luck ran out at 4.57, she was hit on the starboard side, forward of the fore barrette. However, the torpedo bulkhead held and she was able to maintain full speed for the time being. The torpedoes seen from *Seydlitz* were probably those fired by *Petard* and *Nerissa* and perhaps by *Turbulent* as well. As the BCF and the ISG steamed away northwards, *Nestor* and *Nomad* could do little but await their destruction by the advancing High Seas Fleet. Even so, *Nestor* fired her remaining torpedo, while *Nomad* managed to launch four torpedoes at what were thought to be *Kaiser*-class battleships – but there were no hits.³⁵

Thus, the BCF's destroyers were led by *Nestor* into positions from which they attacked with the favourable inclination angles that gave them good running margins; the earlier attackers also had the Aft inclinations that made them more difficult targets. After the ISG reversed course, *Nerissa* also turned about (inclination 120A) but *Petard* (120F) did not. *Nestor* and *Nicator* got much closer (3,000 yards) to the German battlecruisers than the recommended 7,000 yards and *Nestor* was crippled. Many of the 13DF obeyed Jellicoe's instruction to fire at least two torpedoes together, though *Narborough's* commander preferred to retain his torpedoes for a later fleet action. *Petard*, seizing her opportunity for a single close-range browning shot with HS setting at a group of destroyers, sank V29. These attacks played their part in forcing Hipper to break off what had been a very successful gunnery action with the BCF: and they ended with the torpedoing of *Seydlitz*.

The Night Actions

Just after 9pm on 31 May, Admiral Sir John Jellicoe turned the British battle fleet South for the night before forming his battle squadrons into columns separated by distances of one mile; he continued thus until about 2.30am the next morning. At 9.27pm, he ordered his destroyers to take station five miles astern of the battleship

³³ Brooks, *Jutland*, pp.213-14. *AFTJ*, p. 8 (Table I.B).

³⁴ This total includes the two torpedoes fired by *Nestor* and *Nicator* during their second attack. *AFTJ*, p. 9 (Table II) assumes the attack was on the High Seas Fleet, but the despatch of *Nestor's* Commander Barry Bingham, VC (of May 1918: *OD*, pp. 344-9) was not available to its compilers.

³⁵ Brooks, *Jutland*, p. 214.

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columns. Once in position, their order from East to West was: the IIDF (with the 2LCS close by); and then the 4DF, 13DF, 9DF and 12DF. Jellicoe convinced himself that the High Seas Fleet would follow Southward and he hoped that his destroyers might both act defensively as a screen against torpedo attacks: but also that they might have offensive opportunities to attack the enemy ships. However, at 9.14, Scheer ordered the German forces to return to their bases on a SSE'ly course past Horns Reef. He then reformed his line with *Westfalen* and the 1st Battle Squadron (IBS) in the van and, ahead of them, the light cruisers of the IVSG. On this new course, the Germans missed the rear British battleships but instead entered the five-mile gap between them and the following flotillas. Thus, the early night actions all began when, without warning, British vessels encountered enemy ships to starboard. With the German ships looming out of the darkness at short ranges, the British vessels had no time to do anything other than attack on similar courses.³⁶

Around 10.15pm, the German IVSG was on the port bow of their battle fleet, with the light cruisers *Elbing* and *Rostock* in company. They fought two actions in close succession, first with the light cruiser *Castor* and the eight destroyers of the IIDF: and then with the 2LCS. The reports from the IIDF are inconsistent, though it seems that only *Castor* and *Marne* (one each) and *Magic* (two) fired torpedoes; none hit although one passed underneath *Elbing*. All inclinations were Forward, from an unfavourable 60F and 70F (*Magic*) to a better 120F (*Marne*) and 150F (*Castor*). The engagement with the 2LCS was mainly a gun action, in which the British light cruisers that turned on their searchlights – *Southampton* and *Dublin* – suffered severe casualties. At 10.21, *Southampton* fired one torpedo, set for HS, at ‘a group of hostile searchlights, which were the only things visible’.³⁷ The range was 1,500-2,000 yards and the inclination (presumably only a rough estimate) 35F. Just as the two sides were separating, this *browning* shot hit and quickly capsized the old *Frauenlob*. Four of the German light cruisers then fell back to positions near the IBS in the German van.³⁸

As the 4DF's course converged on that of the German battle fleet at or just before 11.30pm, the 1st Half Flotilla was led by *Tipperary* followed by *Spitfire*, *Sparrowhawk*, *Garland* and *Contest*; astern, the 2nd Half Flotilla was in the order *Broke*, *Achates*, *Ambuscade*, *Ardent*, *Fortune*, *Porpoise* and *Unity*.³⁹ The majority of their despatches

³⁶ *Ibid.*, pp. 366, 370, 374, 378, 380-1, 383 and 385.

³⁷ H W Fawcett and G W Hooper (eds.) *The Fighting at Jutland* (Rochester: Chatham, 2001 – first published 1921) p. 290 – henceforward F&H.

³⁸ Brooks, *Jutland*, pp. 383-9. ATFJ, pp. 11-12 (Tables I and II).

³⁹ *Unity* did not take part in the subsequent action: *Ibid.*, p. 396.

agree that unknown vessels, thought to be light cruisers, mainly with three funnels, were first seen on their starboard beam or quarter; they were the four German light cruisers that had fallen back and were now on the port side of the IBS. The leading British destroyers must have been visible from the start from the battleships; *Westfalen* illuminated *Tipperary* and poured in a heavy fire at 1,500-2,000 yards that caused severe casualties and brought her to a halt. Nevertheless, she fired two torpedoes but the range was so short that they ran under the target.⁴⁰

Nassau and *Rheinland* joined *Westfalen* in firing at *Tipperary*, while *Spitfire* and *Sparrowhawk* were also illuminated and *Spitfire* was hit several times. But this left most of the 4DF free to direct an effective gunfire at the enemy battleships' searchlights. Astern of the blazing *Tipperary*, the remaining destroyers of the 1st Half Flotilla and *Broke* turned away, firing torpedoes as they did so at ranges no greater than 1,000 yards. *Spitfire's* two torpedoes were set for LR, even though the firing range was 'under 1,000 yards'. The inclination was 90F and she claimed a hit on a cruiser with four very tall funnels. All the other torpedoes fired by the flotilla were set for HS. *Sparrowhawk* (range 800 yards, inclination 60F), *Garland* (range 800 yards, inclination 100F), *Contest* (range 1,000 yards, inclination 90F) and *Broke* (range 800-1,000 yards, inclination 50F) fired one torpedo each, the last three at light cruisers.

The torpedoes and gunfire from the British line forced *Westfalen* to turn away 8 points to starboard. *Elbing* tried to pass ahead of the battleship *Posen* but, in the confusion, the battleship struck *Elbing* on the starboard quarter, holing her below the waterline and leaving her drifting helplessly. The four-funnelled *Rostock* was also crippled by a torpedo that exploded against her port side. Although several of the 4DF claimed torpedo hits, *Rostock's* profile matched only *Spitfire's* target description, so the latter probably made what would prove to be the only torpedo hit by the flotilla. Both *Elbing* and *Rostock* had to be scuttled early on 1 June.⁴¹

With *Tipperary* out of action, leadership of the 4DF devolved on *Broke*. She had turned away South East as she fired her torpedo but then resumed the course South. *Sparrowhawk* took station astern, with *Garland*, *Contest* and *Achates* not far behind. However, contact with the enemy was renewed too soon for a coordinated attack to be organised. Under a renewed fire from the leading German battleships, at about 11.40pm a hit on *Broke* jammed the helm so that she drove straight into *Sparrowhawk*. *Contest* then sliced off some five feet of *Sparrowhawk's* stern, jamming the rudder. *Broke* was able to pull clear and could still make 10 knots but *Sparrowhawk* could make no headway. At about the same time, the German

⁴⁰ *Ibid.*, pp. 389-92.

⁴¹ *Ibid.*, p. 392-3, 416 and 426. ATFJ, p. 12 (Table III.A).

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battleship *Nassau* attempted to ram *Spitfire* and, despite the destroyer's avoiding efforts, the two collided port-bow to port-bow. As *Spitfire* scraped down her port side, *Nassau* could not depress her guns sufficiently to hit her but, despite extensive damage, *Spitfire* eventually reached the Tyne under her own steam. Both *Tipperary* and *Sparrowhawk* sank early on 1 June.

Ambuscade fired two torpedoes as she turned away at a range of 1,000 yards (the inclination was not recorded). *Garland* then found the remnant of the 2nd Half Flotilla and took station between *Fortune* and *Porpoise*, with *Ambuscade* and *Ardent* ahead of them. Just after midnight, as the 4DF's course S converged once again on the IBS, the flotilla sighted four large enemy ships to starboard. *Fortune*, clearly visible from *Westfalen*, was left burning fiercely. *Rheinland*, *Posen*, *Oldenburg* and *Helgoland* also fired at the 4DF at ranges from 1,700 to 900 yards. *Porpoise* cleared the crippled *Fortune* and, despite several hits, was able to withdraw. As the flotilla turned away, *Ambuscade* (range 700 yards), *Ardent* (range 1,000-1,500 yards, inclination 90F) and *Garland* (range 800 yards, inclination 100F) each fired a torpedo but their torpedoes were seen from *Rheinland* and *Posen* and were avoided. British gunnery was more successful, a shell exploding in *Oldenburg's* fore upper searchlight caused many casualties near the bridge.⁴²

While the other survivors from the 4DF withdrew, *Ardent* made the fateful decision to turn South yet again in the hope of picking up *Ambuscade*. Instead, she found the battleships of the German van crossing her bows from starboard to port. She fired a torpedo at *Westfalen* (range 1,000 yards, inclination 90A) without hitting, but she had already been picked out by the battleship's searchlights and was quickly reduced to a wreck.⁴³

After dark, as the 1 IDF, 2 LCS and 4DF headed South, they suddenly encountered in turn the ships of the German van steering SSE'wards. The British vessels then had no choice but to attack at once on similar courses and at short ranges. Thus (with the exception only of *Ardent's* final torpedo) their enemy inclinations were Forward and they were easy gunnery targets. Even so, despite what may have been an unfavourable inclination angle, *Southampton's* *browning* shot at a group of searchlights sank the *Frauenlob*. Later, the 4DF suffered severe losses to the highly effective fire from the secondary armaments of the German IBS. *Ardent* and *Fortune* were sunk and *Tipperary* reduced to a sinking condition, as was *Sparrowhawk* by collision damage. However, in the first attack, because the German ships had concentrated mainly on

⁴² Ibid., pp. 393-6 and 472. *ATFJ*, p. 12 (Tables III.A and III.B)

⁴³ Ibid., p. 396. *ATFJ*, p. 12 (Table III.B).

Tipperary, many of the other destroyers were able to fire torpedoes with little hindrance. Although no battleships were hit, *Rostock* was torpedoed and *Elbing* was rammed. But, forewarned, the Germans were ready for the next attacks. The second was quickly disrupted as *Broke* was badly hit and she and *Contest* careered into *Sparrowhawk* – though *Nassau* was damaged in her attempt to ram *Spitfire*. With both leaders already out of action, the third attack seems to have been more a collective than a coordinated effort, in which *Fortune* was sunk and *Porpoise* was damaged. Neither attack resulted in any further torpedo hits. Though Forwards, most inclination angles were not unfavourable, though those for *Broke* and *Sparrowhawk* were low (50F and 60F respectively). Only *Spitfire* fired two torpedoes together, though it should be recognised that the *Acasta*-class boats of the 4DF had only two torpedo tubes.

The 12DF at Daybreak

The 4th Flotilla's furious engagement had been visible in all three of the British flotillas to the Eastward, where they were well placed to mount a massed attack from ahead as the German line advanced further. But this promising concentration was broken up when Captain James Farie, commanding the 13DF in the light cruiser *Champion*, suddenly veered away from the enemy with two of his destroyers, pushing the 12DF to the East and even the North-East for a time. After Captain (D12) Anselan Stirling in *Faulknor* had reduced speed to 15 knots to allow *Champion* to pass ahead, by 0.30am he was again leading the flotilla S, his course converging once more with that of the High Seas Fleet. His 1st Division (*Obedient*, *Mindful*, *Marvel* and *Onslaught*) was on *Faulknor*'s starboard quarter and the 2nd Division (*Maenad*, *Narwhal*, *Nessus* and *Noble*) on the port quarter. The 2nd Half Flotilla of four boats followed astern. At 1.43, just as the sky was beginning to lighten, enemy ships were sighted from *Obedient* and *Faulknor*. *Faulknor* turned onto a parallel course, Stirling then ordering the 1st Division, which was nearest to the enemy, to attack. But, as they turned to starboard, the enemy did the same and disappeared, after which the division rejoined the flotilla.⁴⁴

Stirling next ordered the 1st Division to form astern of *Faulknor* before he turned away to port to get ahead of the German battleships unobserved. He then led his line in succession through a large turn to starboard to bring them onto a course NW, after which the enemy were once again in sight heading SE:

The enemy was now clearly visible on our port side, dreadnought battleships leading, pre-dreadnoughts following, a long line of them. Conditions were nearly ideal for an attack, as it was too light for

⁴⁴ *Ibid.*, pp. 399, 417 and 419.

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searchlights to be of much use to the enemy big ships, and yet, with the mist as an added cloak, it was sufficiently dark to make the laying of guns on fast-moving targets [on an opposite course] difficult.⁴⁵

Since at 1.46am all German destroyers had been ordered to assemble on the van of the battle fleet, the German battleships were also uncertain about whether the destroyers in sight to port were friend or foe; some battleships held their fire, though others did not hesitate to turn away and open fire.⁴⁶

Although under fire, *Faulknor* and three of the 1st Division discharged torpedoes as they raced past the enemy battle line. At about 2.05am, *Faulknor* fired two torpedoes, *Obedient* two and *Onslaught* four; all were set for LR, the targets were 3,000-3,500 yards distant and the inclinations were favourable, either 120A (*Faulknor*) or 130A. *Marvel* evidently closed the range before she fired all four torpedoes with an inclination of 90A; all were set for HS, with firing ranges of 1,800 yards for the first two and 1,700 yards for the second pair. *Markgraf* turned away when she saw two torpedoes approaching but even so one ran underneath her. One torpedo exploded in *Kronprinz's* wake, another ran close across the bows of *Grosser Kurfürst*, while a third was avoided by *Hessen*. But at 2.10 *Pommern*, the second pre-dreadnought, was hit by one or possibly two torpedoes on her port side, after which a huge propellant explosion broke her in two. Each of the four British boats declared a hit but *Marvel*, whose four high-speed torpedoes would have been particularly difficult to avoid, probably had the best claim to have sunk *Pommern*. After firing their torpedoes, *Faulknor*, *Obedient* and *Marvel* proceeded down the enemy line without suffering significant damage. But *Onslaught* at the rear of the Division was caught in a German searchlight beam and, just as she turned away by eight points after firing her four torpedoes, a shell burst on her charthouse, though she was able to withdraw.⁴⁷

As *Faulknor* turned through sixteen points to attack, Stirling ordered the flotilla 'to follow round and attack the enemy'. But *Maenad's* captain, Commander John Champion, anticipating that Stirling 'intended closing and firing starboard side', had ordered that both her twin torpedo-tubes should be trained to starboard. When the boats ahead turned sharply in that direction, Champion held his course, turned later and fired a single torpedo at 4,000 yards when one tube had been trained to port; the inclination may have been as little as 50A. *Narwhal* also followed round and, having initially sighted three enemy ships, fired two torpedoes at 2.21 and 2.25, the

⁴⁵ F&H, p. 361.

⁴⁶ Brooks, *Jutland*, pp. 419-20.

⁴⁷ *Ibid.*, pp. 420-1. *ATFJ*, pp. 12-13 (Table IV).

second at what appeared to be the last ship in the enemy line; both were set for LR and fired at 3,000 yards when the inclination was 130A. *Nessus* and *Noble* did not fire any torpedoes, *Nessus* being hit by a 5.9in shell at the base of the foremast. After firing her first torpedo, *Maenad* turned through some 20 points to starboard onto a course converging with that of the German line. She then closed to 4-5,000 yards before firing two more torpedoes set for LR with inclinations of 100F and 140F respectively. No hits were made by the 2nd Division. *Champion* seems to have turned about without regard to the risk of collision with the boats that had been following him. It is likely that *Nessus* and *Noble*, and also *Opal* and her half-flotilla, missed their opportunities to fire torpedoes because they were forced to avoid *Maenad* as she barged through the line; no despatches have been traced from these boats, perhaps because they were too critical of *Maenad*'s proceedings.⁴⁸

When the 12DF encountered the enemy fleet just before daybreak, *Stirling*'s first intention was to attack with just one division on a similar course, which would probably have been driven off with the same heavy losses suffered by the 4DF. Fortunately, the German battleships turned away, which gave *Stirling* the opportunity to reorganise, draw ahead and then turn to lead a determined attack by his 1st Division on an opposite course; in the poor light, his boats were particularly difficult gunnery targets. Probably aware that this was a final opportunity to damage the enemy, in a short time the 1st Division discharged 12 torpedoes in salvoes of two or four. *Marvel*'s four were fired at short range and set for HS; her inclination was 90A, the others an even better 120-130A. This almost textbook attack⁴⁹ resulted in the pre-dreadnought *Pommern* blowing up. But *Champion* in *Maenad* turned back after she fired her first torpedo, obstructing the attacks by the rest of the flotilla.

The initial positioning of the BCF's destroyers at the end of the Run to the South was in accordance with the recognised principles of torpedo tactics and, although the attack was somewhat disrupted by the encounters with the German destroyers, it ended with the torpedoing of *Seydlitz*. After dark, the sudden encounters of the 2LCS and 4DF with the German line forced immediate attacks in tactical circumstances that were not at all favourable for torpedo attack and avoiding enemy gunfire. But, despite heavy casualties and the sinking of four destroyers, their attacks resulted in the eventual loss of three German light cruisers. *Farie*'s flight from the enemy – there seems no other appropriate description – disrupted the British destroyers' best opportunity for a massed attack on the German van. But the

⁴⁸ *Ibid.*, pp. 421-2. *ATFJ*, p. 13 (Table IV).

⁴⁹ However, having encountered the centre of the German line, the flotilla was unable to get ahead and attack from both sides, as recommended in the *Grand Fleet Battle Orders*.

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successful attack by the 1st Division of the 12DF was (after a false start) again in accordance with torpedo tactical principles, though the flotilla was denied further successes by the wild manoeuvring of *Maenad*. Mistakes were certainly made. But Arthur Marder was too severe in describing the British attacks during the night as 'disastrously ineffective'.